CHEMICAL & ENGINEERING NEWS

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C&EN

AUGUST 10, 1992

MODEST EARNINGS INCREASES CONTINUE FOR MOST CHEMICAL FIRMS **PAGE 8**

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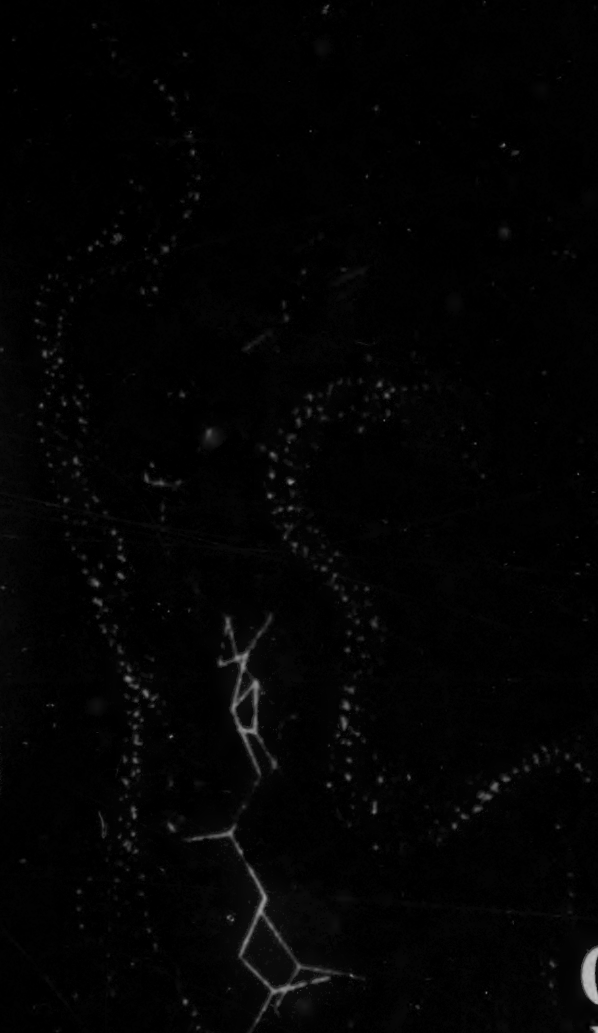

COMPUTERS IN CHEMISTRY

3-D searching and structure generation aid drug design

Page 18

CHEMICAL & ENGINEERING NEWS

C&EN

AUGUST 10, 1992

NEWS OF THE WEEK

■ Big Science has scored two major wins in Congress: The Senate has voted to continue support of the Superconducting Super Collider, and the House rejected attempts to kill funding for space station *Freedom*. Page 3

■ U.S. and Russia have signed an agreement under which the U.S. will help finance Russia's destruction of its chemical weapons stockpile. Page 4

■ In aftermath of the Earth Summit, EPA Administrator Reilly has both blasted the Administration for lack of support at the meeting and praised new initiatives by the U.S. to carry out promises made at Rio. Page 4

■ ICI's proposal to split into two separate companies—ICI and ICI Bioscience—comes as no surprise, is expected to be implemented early next year. Page 5

■ Monsanto plans to sell its Fisher Controls subsidiary to Emerson Electric, probably because of Fisher's lackluster earnings history and poor fit with the rest of Monsanto's businesses. Page 5

COVER: Upjohn's Grow program uses de novo design to generate potential enzyme inhibitors. Photo by Upjohn's Joseph B. Moon

Volume 70, Number 32
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BUSINESS

Earnings rose for all but a few major chemical companies in the second quarter, marking the best quarter for the chemical industry in three years. Page 8

GOVERNMENT

Challenges facing research universities in the areas of educating and training scientists and relating to government are being scrutinized this summer by a federal panel. Page 14

National Academy of Sciences has requested the resignation of Russian mathematician, Igor R. Shafarevich, condemning him for anti-Semitic writings and hiring practices. Page 15

EDUCATION

Last month's International Chemistry Olympiad was a rousing success considering all of the complexities, especially the logistics involved in running two different schedules concurrently. Page 27

ACS NEWS

Mass terminations of chemists are continuing—investigations of six such firings have been completed by the Committee on Professional Relations, and a number of other incidents are being looked into. Page 32

Official reports of actions taken by board standing committees at June meeting of ACS Board. Page 33

SCIENCE/ TECHNOLOGY

New techniques for handling 3-D chemical information give scientists greater ability to understand, predict, and design biological activity. Page 18

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LETTERS

CHEMICAL SAFETY

Mercury vapor release during Kjeldahl distillation

While cleaning a macro-Kjeldahl distillation unit, after years of Kjeldahl and ammonia distillations, at least 20 mL of mercury metal was found in the condensation tubes. Apparently, the mercury had collected above smaller plastic tubes inserted into the bottoms of the glass tubes.

The Environmental Protection Agency approved procedure, which appears in recent editions of "Standard Methods," and which includes use of mercuric sulfate as the preferred and nearly sole catalyst available, was followed. But how did the mercury metal arise? It appears that some of the mercury(II) was reduced by a sulfur species in the sodium hydroxide-sodium thiosulfate solution during the distillation. No warning of this hazard is given in the most recent "Standard Methods" (17th edition), the EPA "Methods for Chemical Analysis of Water and Wastes" (1983), or in any other literature we have seen.

What was even more insidious than the mercury itself, was the way it built up in the condenser tubes, without giving away its presence by visible drops of mercury, over years of titrations. Once in a while, the walls of boric acid-containing receiving flask did show a trace of a black substance, which may have been finely divided mercury or mercuric sulfide that had foamed over.

Because of the release of mercury vapor into the air allowed by this process, this distillation, especially if not done in a hood, presents a hazard to all laboratory personnel. We recommend using the copper catalyst that the 17th edition of "Standard Methods" allows [if organic nitrogen recovery is close to that obtained by the mercury(II) catalyst], or, if it is absolutely necessary, to use mercury(II), to set the apparatus in the hood. We hope that EPA soon sees fit to approve a mercury-free procedure to be published in a future *Federal Register*.

David Lewis
Chemist
City of Lompoc
Lompoc, Calif.

Alfred Bader

I read with great sadness the article on Alfred Bader (C&EN, April 6, page 39). Although I was aware of some of the developments within Sigma-Aldrich, I feel very strongly that they have made a foolish mistake by removing their strongest supporter from the board.

There are many things I could say about Bader, but for the purposes of this letter I restrict myself to two—one professional and one personal. Through his energy and interest in chemistry, he has established a world network of personal contacts who have appreciated his visits and help. Through these contacts, he established Aldrich as a household name, but much more importantly, he has advanced science by making available a massive range of research materials, many of which he personally championed to the Aldrich catalog through his visits to the research groups involved with the initial discoveries. The ready availability of these compounds has stimulated new areas of research worldwide.

On the personal side, I have found Bader to be one of the most honest, kind-hearted, and pleasant individuals whom I have had the pleasure of knowing as a professional colleague and friend. I am disappointed that Sigma-Aldrich is making the decision it is. It cannot be wise for Sigma-Aldrich, and it certainly is not in our best interest either. If they wish to remove members from their executive board, I could suggest others who I believe should step down rather than the man who has given his life for the good of the company.

Steven V. Ley, FRS
Professor of Organic Chemistry
Head of Department
Imperial College of Science, Technology & Medicine, London

Correction

- June 29, page 80: The allotments for all ACS local sections in 1993 shoula total $1,039,139, instead of the reported figure of $1,038,553.

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Chemical Industry Enjoys Best Financial Quarter in Three Years

William J. Storck,
C&EN Northeast News Bureau

Second-quarter 1992 may be remembered as the watershed for the chemical industry because it can be argued that in that quarter, the long string of earnings declines virtually ended.

Combined earnings at the 30 chemical companies regularly surveyed by C&EN did show a decline from the same period last year—but of only 0.4%. This is by far the smallest drop since the year-to-year declines in quarterly results began in third-quarter 1989.

In addition, as in the past few quarters, the companies showing earnings declines were vastly outnumbered by those showing gains. In the second quarter, just six of the 30 chemical companies had lower earnings than a year earlier; the remaining 24 all posted higher earnings.

It probably is true that the 30 companies' earnings from operations, excluding significant nonrecurring and extraordinary charges (the way C&EN reports earnings, when possible), were unchanged from a year ago. Morton International had a $12 million pretax charge in the quarter that the company did not report on an after-tax basis, rendering it impossible to factor out of the results. If this could have been taken out, it probably would have eliminated the $6 million decline in combined earnings for the 30 companies between the second quarter of last year and the same period in 1992.

Monsanto's drop represented by far the largest dollar decrease—$134 million. If Monsanto's results alone were not included in the group tally, overall earnings for the other 29 companies would have been up 13% for the quarter. This is reminiscent of the first quarter when a big decline at Dow Chemi-

Chemical industry leaders for second quarter . . .

Sales

Rank 1992		$ Millions	Rank 1991
1	Dow Chemical	$4859.0	1
2	Monsanto	2280.0	2
3	American Cyanamid	1477.3	3
4	W. R. Grace	1370.8	4
5	Union Carbide	1257.0	5
6	Air Products	824.7	8
7	Rohm & Haas	783.3	6
8	Arco Chemical	769.0	9
9	Hercules	713.2	7
10	Ethyl	662.0	10

Earnings*

	$ Millions	Rank 1991
Dow Chemical	$200.0	2
American Cyanamid	147.5	3
Monsanto	139.0	1
Rohm & Haas	76.4	6
Arco Chemical	74.0	14
Air Products	68.4	5
W. R. Grace	64.1	4
Great Lakes Chemical	58.8	9
International Flavors	55.4	8
Imcera	55.1	13

Profitability

	Earnings as % of sales	Rank 1991
International Flavors	18.8%	1
Great Lakes Chemical	15.4	3
Loctite	13.2	2
Imcera	11.8	12
Betz Laboratories	11.6	4
Nalco Chemical	10.7	6
American Cyanamid	10.0	7
Rohm & Haas	9.8	15
Arco Chemical	9.6	19
Crompton & Knowles	9.6	8

. . . and for first six months of 1992

Sales

Rank 1992		$ Millions	Rank 1991
1	Dow Chemical	$9498.0	1
2	Monsanto	4468.0	2
3	American Cyanamid	2855.9	4
4	W. R. Grace	2603.5	3
5	Union Carbide	2444.0	5
6	Air Products	1618.0	7
7	Arco Chemical	1531.0	9
8	Rohm & Haas	1497.7	8
9	Hercules	1457.3	6
10	Ethyl	1340.0	11

Earnings*

	$ Millions	Rank 1991
Dow Chemical	$368.0	1
Monsanto	300.0	2
American Cyanamid	262.3	3
Arco Chemical	144.0	15
Air Products	141.7	4
Rohm & Haas	135.7	8
Ethyl	115.8	5
Great Lakes Chemical	111.8	10
International Flavors	106.1	6
W. R. Grace	89.1	7

Profitability

	Earnings as % of sales	Rank 1991
International Flavors	18.3%	1
Great Lakes Chemical	15.4	3
Loctite	13.3	2
Betz Laboratories	11.5	4
Nalco Chemical	10.4	5
Lubrizol	10.1	8
Imcera	9.7	14
Arco Chemical	9.4	24
American Cyanamid	9.2	7
Crompton & Knowles	9.2	9

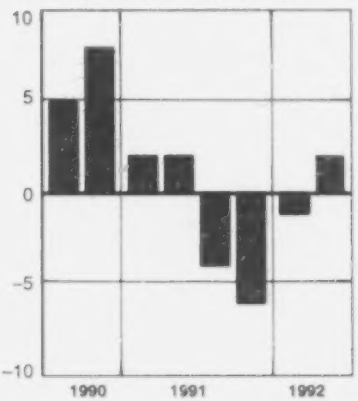
Note: Based on 30 chemical companies listed on page 10. a. After taxes.

Chemical industry 1992 second-quarter results

- **Sales rose 2%**
- **Earnings were flat**
- **Profit margin was 5.9%**
- **Production rose 5.7%**
- **Prices were flat**

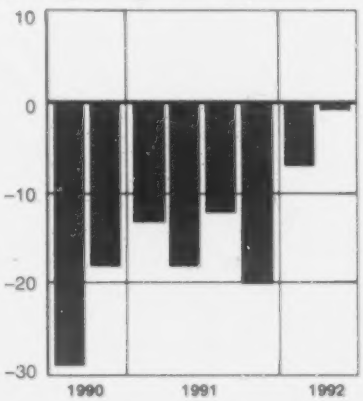
Sales

% change from year-earlier quarter



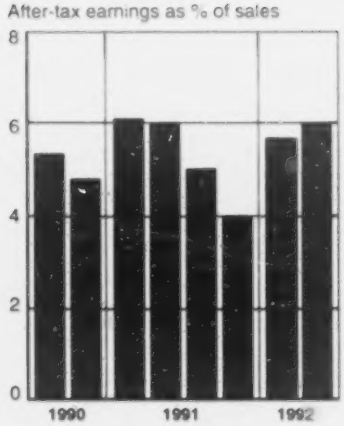
Earnings

% change from year-earlier quarter



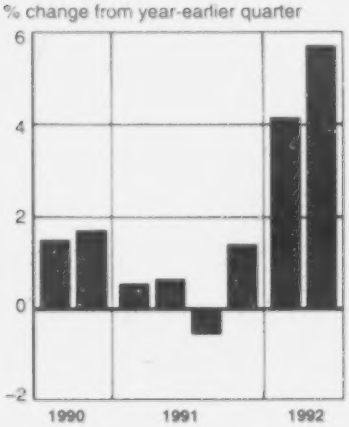
Profit margins

After-tax earnings as % of sales



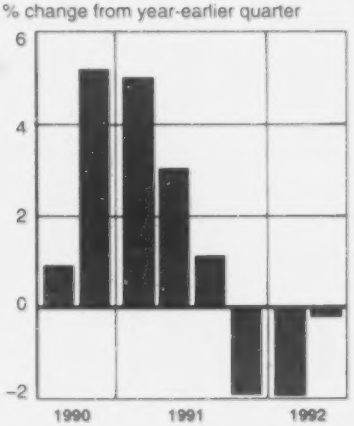
Production

% change from year-earlier quarter



Prices

% change from year-earlier quarter



Note: All sales, earnings, and profit margin data are based on 30 chemical companies listed on page 10

cal brought the total group's earnings change to a 7% decrease from an otherwise 10% increase without Dow included.

If the second quarter does finally signal the end of the declines for the chemical industry, then chemical companies have a long way to go to make up the lost ground. In the past three years the recession has taken a huge toll on earnings: just-tallied second-quarter results are still 39%, or $780 million, less than in second-quarter 1989. And, on a 12-month basis through June, earnings for the 30 companies surveyed are about $3 billion below those in 1988, the last full year of expansion.

Other data also signal that the chemical recession may be coming to a close. For instance, prices of chemicals and allied products in the second quarter were essentially unchanged from 1991's second quarter, according to data from the Department of Labor. If it were not for the unusual runup in prices during the first part of 1991 because of the Gulf War and its aftermath, second-quarter price data this year also would have shown an improvement.

Production is increasing, with chemical output in the second quarter of this year up almost 6% over the comparable period in 1991. This is the biggest year-to-year change in more than three years, according to government data. The caveat is that for industrial chemicals, the main staple of the industry, production and prices are lagging those for all chemical products. However, this is a normal trend, with specialty chemicals, including pharmaceuticals, leading the way out of recession.

Linked to production, plant capacity utilization was about 80% in the second quarter, according to government estimates, its highest level during the recession. The increase in capacity use should mean that companies' profitability will increase, as plants that are operating at better rates run more efficiently and productively, increasing

All but six companies posted earnings gains in second quarter

	SECOND-QUARTER 1992						FIRST-HALF 1992			
	Sales	Earnings[a]	Change from 1991		Profit margin[b]		Sales	Earnings[a]	Change from 1991	
	($ millions)		Sales	Earnings	1992	1991	($ millions)		Sales	Earnings
Air Products	$ 824.7	$ 68.4	16%	20%	8.3%	8.0%	$ 1,618.0	$ 141.7	10%	15%
American Cyanamid	1,477.3	147.5	4	12	10.0	9.3	2,855.9	262.3	4	11
Arco Chemical	769.0	74.0	9	124	9.6	4.7	1,531.0	144.0	11	235
Betz Laboratories	175.9	20.4	6	8	11.6	11.3	351.5	40.5	7	9
Cabot	371.0	16.4	7	155	4.4	1.9	788.9	38.4	4	75
Crompton & Knowles	134.6	12.9	13	20	9.6	9.0	248.3	22.7	10	21
Dow Chemical	4,859.0	200.0	1	–14	4.1	4.9	9,498.0	368.0	–3	–38
Ethyl	662.0	52.6	4	5	7.9	7.9	1,340.0	115.8	4	12
First Mississippi	130.1	1.1	–14	108	0.9	0.4	252.9	3.4	–11	46
H. B. Fuller	234.6	10.1	8	42	4.3	3.3	453.4	16.2	8	50
Georgia Gulf	193.0	13.5	–10	–19	7.0	7.8	382.6	26.5	–15	–22
B. F. Goodrich	657.3	13.1	3	58	2.0	1.3	1,262.6	13.2	4	144
W. R. Grace	1,370.8	64.1	–2	5	4.7	4.4	2,603.5	89.1	–5	–6
Great Lakes Chemical	381.6	58.8	10	47	15.4	11.5	726.1	111.8	9	42
Hercules	713.2	43.2	–3	18	6.1	5.0	1,457.3	80.1	–3	16
IMC Fertilizer	279.7	7.6	–8	–58	2.7	6.0	565.3	27.9	–4	–24
Imcera	467.9	55.1	3	62	11.8	7.5	901.4	87.7	5	43
International Flavors	295.6	55.4	11	14	18.8	18.4	579.7	106.1	8	11
Loctite	154.2	20.4	9	8	13.2	13.4	301.6	40.0	8	16
Lubrizol	414.7	39.4	12	43	9.5	7.5	829.6	83.5	12	33
Monsanto	2,280.0	139.0	–8	–49	6.1	11.0	4,468.0	300.0	–5	–32
Morton International	505.0	34.4	9	1	6.8	7.3	1,060.5	75.6	8	1
Nalco Chemical	340.3	36.4	7	10	10.7	10.4	666.8	69.4	14	8
Olin	632.9	20.8	11	1	3.3	3.6	1,247.1	44.4	10	6
Petrolite	79.6	4.4	–4	16	5.5	4.5	159.6	8.7	–1	32
Quantum Chemical	542.7	–41.7	–7	def	def	def	1,174.0	–53.8	–11	def
Rohm & Haas	783.3	76.4	4	45	9.8	7.0	1,497.7	135.7	5	44
Stepan	113.9	4.1	9	52	3.5	2.6	221.3	8.2	7	60
Union Carbide	1,257.0	26.0	4	–28	2.1	3.0	2,444.0	70.0	–4	–24
Witco	426.9	18.0	1	12	4.2	3.8	847.3	36.9	3	13
TOTAL[c]	$21,528.4	$1291.9	2%	0%	6.0%	6.1%	$42,333.8	$2514.1	1%	–3%

a. After tax earnings from continuing operations, excluding significant nonrecurring and extraordinary items. b. After tax earnings as a percentage of sales. c. Includes nonrecurring items.

operating margins. And as capacity utilization improves, chemical companies will be able to increase prices, giving themselves greater earnings leverage. However, operating rates probably will have to rise to the high-80 to low-90% levels before there are any substantial increases in prices above increases in raw material costs.

Driving the recovery in production is some upward movement in major end-use markets. Housing starts are still moving upward, although the commercial real estate market continues in dire straits. The increase in housing starts affects fibers, plastics, and other home-oriented downstream chemical products.

The number of autos produced domestically, although still languishing, is forecast by some economists to be up about 5% this year over 1991. This will help mainly the plastics and paint industries, but also will boost demand for fibers.

For the second quarter, overall, however, these situations did not develop fast enough as mirrored in the results of the 30 companies. Combined sales of the companies totaled $21.5 billion, a modest 2% increase over the same period the year before. Earnings totaled $1.29 billion, essentially the same as in second-quarter 1991. The result was a slight decline in profit margin—earnings as a percent of sales—with the average for the group falling to 6.0% in the second quarter from 6.1% in last year's second quarter.

Chemical companies (defined by C&EN as having half or more of sales contributed by chemicals) can take heart in once again outperforming the oil industry. For 11 oil companies surveyed by C&EN, earnings fell 10% to $2.35 billion on a 3% sales increase to $84.4 billion. Interestingly, however, chemical earnings for five of the oil companies reporting—Amoco, Exxon, Chevron, Occidental Petroleum, and Texaco—increased an average 5% over second-quarter 1991.

However, pharmaceutical companies as well as diversified companies that produce chemicals both handily outperformed chemical companies. The 11 diversified firms surveyed posted a combined 21% increase in earnings to almost $1.77 billion on a narrow 1% sales increase to about $30 billion. And

FIRST-HALF 1992		12-MONTH RUNNING DATA			
Profit margin[b]		Change from 1991		Profit margin[b]	
1992	1991	Sales	Earnings	1991	1990
8.8%	8.4%	4%	10%	8.5%	8.0%
9.2	8.7	11	15	7.0	6.8
9.4	3.1	3	-34	5.5	8.6
11.5	11.2	10	13	11.4	11.1
4.9	2.9	-11	-19	3.3	3.7
9.2	8.4	14	20	8.2	7.8
3.9	6.1	-7	-40	4.2	6.5
8.6	8.0	2	-5	8.1	8.6
1.4	0.8	3	82	1.8	1.0
3.6	2.6	7	22	3.5	3.0
6.9	7.5	-13	-38	7.2	10.2
1.0	0.4	3	-85	0.5	3.4
3.4	3.4	-11	3	3.5	3.0
15.4	11.8	17	18	12.8	12.7
5.5	4.6	-9	22	4.9	3.6
4.9	6.2	-5	-11	7.4	8.0
9.7	7.1	7	24	6.6	5.7
18.3	17.9	4	6	16.7	16.4
13.3	12.4	2	12	13.3	12.0
10.1	8.5	3	-4	8.8	9.5
6.7	9.3	-1	24	7.0	5.6
7.1	7.6	7	7	7.2	7.2
10.4	11.0	12	4	10.4	11.3
3.6	3.7	-7	-4	3.0	2.9
5.5	4.1	7	32	5.0	4.0
def	def	-11	def	def	1.3
9.1	6.6	0	-7	6.5	6.9
3.7	2.5	6	6	3.4	3.4
2.9	3.6	-10	-77	1.0	3.7
4.4	4.0	1	16	4.6	4.0
5.9%	6.2%	2%	-15%	5.5%	6.6%

def = deficit

10 pharmaceutical producers surveyed registered a 10% earnings gain to nearly $2.95 billion on a 9% sales increase to $17.8 billion.

For the first six months of 1992, combined earnings for the group of chemical companies slipped 3% from first-half 1991 to about $2.51 billion on a 1% sales increase to $42.3 billion. Profit margin for the group averaged 5.9%, down from 6.2% in the first half of last year.

Even with Monsanto's major negative effect on chemical second-quarter results, chemical operations at the company suffered relatively little. According to the company, operating income for its chemical group—eliminating the effects of a 1991 reorganization and of a 1992 lawsuit settlement—declined only 3% from the same period a year ago. Most of the damage at Monsanto came in its pharmaceutical and NutraSweet operations, with agricultural chemicals also contributing.

The other five companies that reported earnings declines in the quarter were IMC Fertilizer, down 58% to $7.6 million; Union Carbide, down 28% to $26 million; Georgia Gulf, down 19% to $13.5 million; Dow Chemical, off 14% to $200 million; and Quantum Chemical, where the red ink deepened to a loss of $41.7 million from a loss from operations of $33.7 million in second-quarter 1991.

Three of the chemical companies surveyed more than doubled earnings from operations in the second quarter—First Mississippi, Arco Chemical, and Cabot.

First Mississippi increased earnings 108% to $1.1 million as sales fell 14% to $130 million. The company notes that its earnings increase came from fertilizers, gold, oil, and gas.

Arco Chemical boosted earnings from operations 124% to $74 million—the largest earnings gain of the 30 companies in terms of dollar volume—and sales rose 9% to $769 million. Alan R. Hirsig, president and chief executive officer, says, "Lower year-to-year feedstock costs contributed to the significant increase in earnings from operations, as did the growth in sales volumes, particularly in our Americas region. Recent volume trends are stable and are definitely at higher levels than last year. However, the strength of the economic recovery is still of concern."

At Cabot, earnings soared 155% to $16.4 million on a 7% sales increase to $371 million. Company chairman Samuel W. Bodman says that most of the gain came from better management of costs. In terms of the economy, he says, "For most of this year we have benefited from some improvement in the business climate, but the improvement has been sporadic and unpredictable—up some months, down others. Convincing evidence of meaningful and sustainable improvement in the global economy is still absent."

Another company still worried about the economy is Dow Chemical. Its executive vice president and chief financial officer Enrique C. Falla says: "Our latest results are disappointing even though they show an improvement over the first quarter of the year, which could very well be our trough quarter. Earnings are still unfavorable when making year-to-year comparisons, and we do not expect to exceed 1991 results until sometime in the second half of this year."

W. R. Grace, although expecting to continue increased earnings in the second half, seems slightly unsure about the strength of the recovery. Chairman J. Peter Grace says, "Our latest estimates suggest each of our core busi-

Ground rules for C&EN earnings analysis

C&EN's quarterly report on financial performance of the U.S. chemical industry contains data from the 30 largest U.S. basic chemical companies and from 22 oil and diversified companies, each with more than $200 million in annual chemical sales, plus 10 pharmaceutical companies.

To be included in the table of basic chemical producers, a company must have at least 50% of its sales in chemicals. That is why Du Pont, for example, is included in the table of diversified manufacturers.

In referring to chemical sales, C&EN means those chemicals whose molecular composition has been changed in the course of manufacture. Hence, chemical sales include those of traditional categories of basic petrochemicals and inorganics, organic intermediates and inorganic compounds, polymers such as plastics and fibers, and agricultural chemicals and specialty derivatives.

In listing earnings, the survey gives after-tax income for continuing operations before nonrecurring items and extraordinary charges. Foreign currency translations are included.

Diversified companies showed better earnings performance than oil or drug companies

	FIRST-QUARTER 1992						FIRST-HALF 1992					
	Sales	Earnings[a]	Change from 1991		Profit margin[b]		Sales	Earnings[a]	Change from 1991		Profit margin[b]	
	($ millions)		Sales	Earnings	1992	1991	($ millions)		Sales	Earnings	1992	1991
OIL AND GAS COMPANIES												
Amoco	$ 7,370.0	$ 237.0	9%	–23%	3.2%	4.5%	$ 13,759.0	$ 423.0	–2%	–42%	3.1%	5.2%
Ashland	2,628.7	20.6	10	–69	0.8	2.8	4,881.6	11.5	7	–88	0.2	2.1
Chevron	10,600.0	389.0	9	47	3.7	2.7	20,300.0	606.0	–1	–28	3.0	4.1
Exxon	27,759.0	955.0	2	–15	3.4	4.1	55,673.0	2305.0	–4	–32	4.1	5.8
Kerr-McGee	876.2	30.3	12	194	3.5	1.3	1,658.9	38.9	6	–3	2.3	2.5
Mobil	15,189.0	255.0	5	–36	1.7	2.8	30,340.0	468.0	–2	–58	1.5	3.6
Occidental Petroleum	2,176.0	43.0	–9	–34	2.0	2.7	4,330.0	64.0	–16	–55	1.5	2.8
Phillips Petroleum	3,090.0	104.0	–5	215	3.4	1.0	5,849.0	16.0	–14	–93	0.3	3.2
Sun Co.	2,690.0	6.0	–11	–89	0.2	1.8	5,220.0	–7.0	–13	def	def	1.7
Texaco	9,400.0	245.0	4	–9	2.6	3.0	17,960.0	445.0	–7	–35	2.5	3.6
Unocal	2,670.0	66.0	–2	1220	2.5	0.2	5,090.0	82.0	–6	3	1.6	1.5
TOTAL	$84,448.9	$2350.9	3%	–10%	2.8%	3.2%	$165,061.5	$4,452.4	–4%	–40%	2.7%	4.3%
DIVERSIFIED MANUFACTURERS												
Allied-Signal	$ 3,075.0	$ 145.0	1%	20%	4.7%	4.0%	$ 6,054.0	$ 272.0	2%	48%	4.5%	3.1%
Du Pont	9,774.0	573.0	–1	14	5.9	5.1	18,959.0	1,056.0	–3	–3	5.6	5.6
Eastman Kodak	5,190.0	361.0	4	1	7.0	7.2	9,600.0	506.0	2	–5	5.3	5.7
Engelhard	637.2	26.9	–2	17	4.2	3.5	1,267.1	50.7	–1	15	4.0	3.4
FMC	1,061.1	65.4	1	5	6.2	6.0	1,995.0	120.1	4	19	6.0	5.3
Ferro Corp.	291.9	14.7	8	48	5.0	3.7	564.6	27.7	6	116	4.9	2.4
3M	3,504.0	322.0	5	8	9.2	8.9	6,910.0	610.0	3	2	8.8	8.9
NL Industries	217.2	17.6	–8	def	8.1	def	442.3	–21.8	–4	def	def	def
PPG Industries	1,513.1	106.7	2	35	7.1	5.4	2,959.0	185.5	4	84	6.3	3.5
Tenneco	3,435.0	105.0	0	def	3.1	def	6,645.0	140.0	–1	def	2.1	def
Vulcan Materials	284.2	30.2	7	17	10.6	9.7	494.8	34.9	7	47	7.0	5.1
TOTAL	$28,982.7	$1267.5	1%	21%	6.1%	5.1%	$ 55,891.6	$2,981.1	0%	12%	5.3%	4.8%
PHARMACEUTICAL COMPANIES												
Abbott Laboratories	$ 1,908.7	$ 317.1	13%	18%	16.6%	15.9%	$ 3,786.6	$ 611.3	13%	17%	16.1%	15.7%
American Home Products	1,756.2	296.1	8	12	16.9	16.4	3,754.7	702.4	11	14	18.7	18.3
Baxter International	2,421.0	156.0	10	11	6.4	6.4	4,717.0	287.0	9	14	6.1	5.8
Bristol-Myers Squibb	2,880.4	488.0	5	0	16.9	17.9	5,663.8	1,035.5	4	5	18.3	18.0
Eli Lilly	1,478.3	338.2	7	7	22.9	23.1	3,035.4	780.8	8	11	25.7	25.1
Merck	2,373.7	653.4	12	18	27.5	26.2	4,597.0	1,222.1	10	18	26.6	24.9
Pfizer	1,694.2	203.8	4	14	12.0	11.0	3,455.5	498.9	4	12	14.4	13.4
Schering-Plough	1,019.6	184.9	12	10	18.1	18.3	2,041.5	378.2	10	11	18.5	18.3
Upjohn	883.6	129.9	3	2	14.7	14.8	1,755.4	273.6	6	5	15.6	15.7
Warner Lambert	1,373.3	177.8	11	15	12.9	12.5	2,684.9	341.5	9	16	12.7	12.0
TOTAL	$17,789.0	$2945.2	9%	10%	16.6%	16.3%	$ 35,491.8	$6,131.3	8%	12%	17.3%	16.7%

a After tax earnings from continuing operations, excluding significant nonrecurring and extraordinary items. b After tax earnings as a percentage of sales. def = deficit.

nesses should exceed results from last year's second half. On this basis, reaching our full-year objective of at least 10% growth is attainable, but it will be a challenge, particularly if the European economy does not recover from its present low level."

No matter what happens in Europe or elsewhere, most chemical executives believe, and probably rightly so, that the recovery is going to be a slow, and perhaps sporadic, affair. Bodman's comments about the month-to-month differences in the economy will, for the short term, at least, be right on the mark.

For instance, the government reported last week the index of leading economic indicators in June fell slightly after rising for five straight months. Analysts are taking it as a sign that economic activity will be slow, at least through September, and may need a further spur from the government. If they are right, look for chemical earnings in the third quarter, and perhaps for the rest of the year, to be up from year-earlier levels—but don't look for the big double-digit increases seen before the recession. □

Firings of Chemical Professionals Continue To Proliferate

Mass firings of chemists are apparently continuing to pervade chemical and related industries. The latest report by the American Chemical Society's Committee on Professional Relations (CPR) presents completed investigations of six such mass terminations, indicates that five more are under investigation, and states that 22 other, so far unverified, incidents are being looked into.

The new report is the 34th in a series dating back to 1974. As with earlier reports, it compares the compliance performance of the employers involved with five standards spelled out in ACS's Professional Employment Guidelines (PEG).

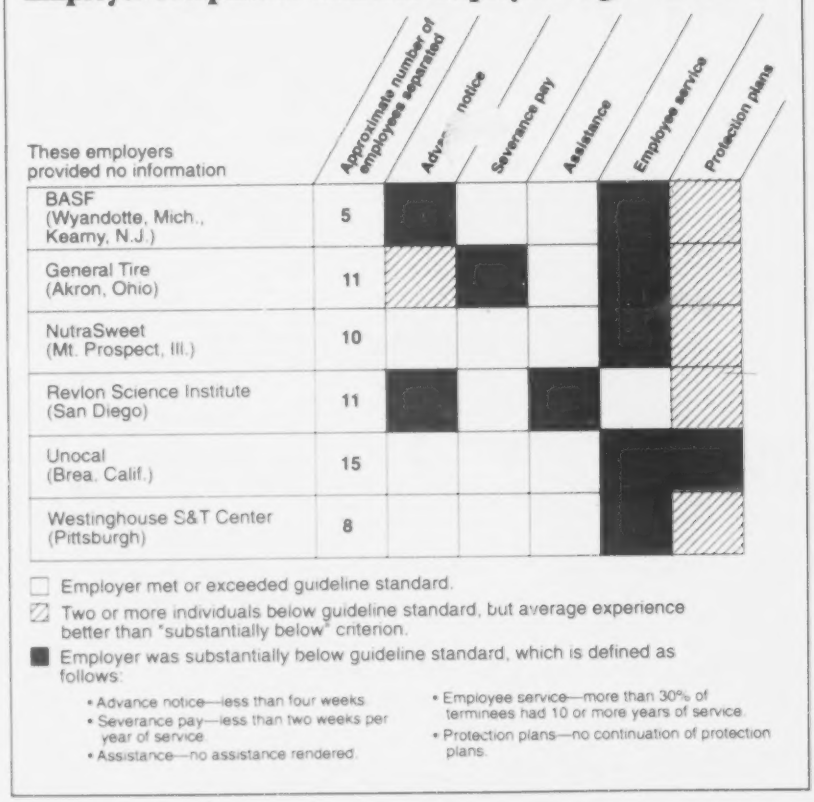
These guidelines are concerned with advance notice, severance pay, assistance after termination, length of employee service, and employee protection after termination. Average compliance by the six firms involved in the latest report was 47%. This was slightly better than an average of 41% for the previous 33 reports.

The six terminations for which the investigations are complete involved the loss of a total of about 60 chemical jobs. The biggest cut was 15 at Unocal. The other organizations involved were BASF, General Tire, NutraSweet, Revlon Science Institute, and Westinghouse. None of these employers provided CPR with data on these terminations. All data for the investigations came from the terminees themselves. Of those identified individually as terminees, 75% responded to questionnaires from CPR.

CPR defines a mass termination as a situation in which three or more chemists or chemical engineers are terminated by the same employer within a six-month period for reasons other than continuing evidence of previously documented inadequate performance, completion of a contract, or cause.

Compliance with the PEG standards has improved modestly over the years.

Employer compliance with ACS employment guidelines



☐ Employer met or exceeded guideline standard.

▨ Two or more individuals below guideline standard, but average experience better than "substantially below" criterion.

■ Employer was substantially below guideline standard, which is defined as follows:

- Advance notice—less than four weeks.
- Severance pay—less than two weeks per year of service.
- Assistance—no assistance rendered.
- Employee service—more than 30% of terminees had 10 or more years of service.
- Protection plans—no continuation of protection plans.

ACS Professional Employment Guidelines

- Advance notice. Four-week minimum.
- Severance pay. Minimum is two weeks per year of service. Additional notice may be given, by mutual agreement, in lieu of severance pay.
- Assistance. Efforts should be made to place terminee in another position within the organization, or terminee should be given assistance to find employment elsewhere.
- Employee service. Those with minimum of 10 years' service should not be terminated except for continued evidence of previously documented inadequate performance or cause.
- Employee protection plans. Should be extended for a minimum of one month, plus two weeks for each year of employee service, following termination, at same rate of contribution as before. Employee would have additional 31-day grace period.

For the first 17 reports, through 1983, it averaged 40%. Since then, it has averaged 43%.

The biggest change has come in meeting the standard of two weeks' pay for each year of service. For the first 17 reports, only 13% of employers complied. For the second 17, compliance was 37%. However, compliance with the standard designed to protect employees with more than 10 years of service has moved the other way. For the earlier reports, 28% of employers complied by not firing such employees. For the latter reports, compliance is down to 15%.

These trends are reflected in the latest report. Five of six employers met the severance pay standard. But five out of six terminated chemical professionals with more than 10 years of service.

Of the other standards, that for advance notice has been complied with 41% of the time for all 34 reports—three out of six in the latest report. The standard for helping terminees to find new employment was met by all but one of the employers in the latest report and by 82% of employers since 1983. The standard calling for extending employee protection plans for a period after termination has been met by 48% of employers in all 34 reports. But none did so in the latest report.

CPR requests that chemical professionals who have been fired or have taken early retirement contact the American Chemical Society, Office of Professional Services, 1155—16th St., N.W., Washington, D.C. 20036. Copies of all CPR termination reports and related C&EN stories are available, on request, from the same office.

Michael Heylin

Official Reports from the June Board Meeting

Only board standing committees met during the ACS Board's meeting in June at the society's Belmont Conference Center in Elkridge, Md. Among actions taken by the board at that meeting were confirmation of an amendment to Bylaw II, Sec. 6, governing use of Corporation Associates dues, and approval of meeting sites and dates of ACS national meetings in 1996 and 2002, recommended by the council earlier this year. Following are the committees' reports.

Reports of Standing Committees

Grants & Awards

The board of directors approved the committee's recommendations to increase the value of several awards that recognize achievement in organic chemistry. The personal stipends associated with the Arthur C. Cope Award and the Roger Adams Award will both be raised from $15,000 to $25,000. The Cope Award grant-in-aid for research will increase from $30,000 to $50,000, and the similar research grant for Arthur C. Cope Scholars will be $25,000 instead of $20,000. All of these changes will take effect with the 1993 presentations.

The committee approved 164 ACS-PRF grants totaling $5,036,160 for fundamental research and scientific education from 460 proposals. PRF grant commitments for 1992, now complete, total $14,413,529. The committee also approved an increase in membership of the PRF Advisory Board from 26 to 28, in response to growth in the number of research proposals.

John G. Verkade, *chairman*

Professional & Member Relations

The committee considered statistics on the status of employment in the chemical industry based on a staff report on career services for ACS members. Noting that current economic conditions have resulted in a higher number of requests for dues deferral from unemployed members (649 as of May 31), the committee discussed ways to ensure that member needs for career services are being met. Accordingly, it recommended that the board of directors grant a special 1992 appropriation of $25,000 to be used at the Washington national meeting to enhance career services for members, and to increase travel funds for staff to provide career services on request of local and regional groups.

In other actions, the committee recommended that the board approve a revised publication schedule for *Reaction Times*, a college science newspaper; recommended that the board refer to the divisions of Analytical Chemistry and of Physical Chemistry for consideration as cosponsoring groups a request for ACS to be a cooperating society in a spectroscopy meeting; and agreed to ask the Committee on Membership Affairs routinely to send graduate research directors at institutions granting advanced degrees a letter describing ACS activities, and encouraging the directors to share these letters with their graduate students.

Stanley Kirschner, *chairman*

Public Affairs & Public Relations

The committee was updated on activities of the Van Task Force that is investigating opportunities for ACS to become involved in chemistry "van programs" now being conducted across the U.S. It was recommended that the board of directors confirm the appointment of this task force.

The committee discussed a request to have prominent chemists featured on U.S. postal stamps, and recommended board endorsement of pursuing the concept with the U.S. Postal Service to include the science of chemistry and its practitioners on U.S. postal stamps.

Based on a report of usage statistics that was presented, the committee concluded that the Media Science Electronic Bulletin Board in the Department of Public Communications is a concept ahead of its time. The committee therefore recommended to the board of directors that it be discontinued by Sept. 1, 1992, and that its funding be redirected to other areas of public communications.

This is the third year for the ACS annual Federal Policy Agenda. Since the issues addressed normally do not change within a calendar year, the committee recommended to the board of directors that the Federal Policy Agenda be issued on a biennial basis corresponding with the beginning of each new Congress. The first biennial issue will be available in January 1993.

C. Marvin Lang, *chairman*

Nominations sought for Baekeland Award

The ACS North Jersey section is soliciting nominations for the 1993 Leo Hendrik Baekeland Award. The award, supported by the section and Union Carbide, consists of a gold medal and a $1000 honorarium. It is given in recognition of accomplishments in pure or industrial chemistry to an American chemist who will be under the age of 40 as of Jan. 1, 1993. Nominations should include a letter describing the nominee's achievements, a biography, and a list of publications. Renominations are encouraged. Submit materials by Nov. 30 to Nicholas I. Carruthers, Schering Plough Research Institute, 60 Orange St., Bloomfield, N.J. 07003. □